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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,800	12/17/2001	Katsumi Tada	ASA-1046	7410

7590 10/21/2004

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EXAMINER	
NGUYEN, CINDY	

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/015,800	TADA ET AL.	
	Examiner	Art Unit	
	Cindy Nguyen	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 September 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This is in response to communication filed 09/01/04.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/01/04 with the amendment has been entered.

1. Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-10, 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itonori et al. (U.S 5943443) (Itonori) in view of Yamagata et al. (US 5048113) (Yamagata).

Regarding claim 1 and 16, Itonori discloses: An apparatus and a system for expanding a character string comprising:

a character string dividing device (101, fig. 21 and corresponding text, Itonori) to divide an entered character string into a plurality of partial character strings each having a plurality of characters (col. 19, lines 6-20, Itonori), the character string is entered to search image information of documents (col. 18, lines 65 to col. 19, lines 2, Itonori).

However, Itonori didn't discloses: a referencing device that refers to a similarity table, the similarity table previously storing groups of similar partial character strings, each of the groups of similar partial character strings being derived from each of the plurality of partial character strings obtained from the character string dividing device by changing at least one of the characters of each partial character string to a different character which is similar in shape. On the other hand, Yamagata discloses: a referencing device that refers to a similarity table (col. 15, table 7, Yamagata), the similarity table previously storing groups of similar partial character strings[1] (1st, 2nd, 3rd candidate, Yamagata), each of the groups of similar partial character strings being derived from each of the plurality of partial character strings obtained from the character string dividing device by changing at least one of the characters of each partial character string to a different character which is similar in shape[2] (1st, 2nd, 3rd candidate, Yamagata). Thus, at the time invention was made, it would have been obvious to a person of ordinary skill in the art to include the similarity table previously storing groups of similar partial character strings above in the system of Itonori as taught by Yamagata. The motivation being to enable the system provides a character recognition post processing method wherein recognition results are corrected in order of from the reference character to successively adjacent characters and comprising the steps of correcting recognition results for each character on the basis of comparison results for the reference position.

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[1] table 7 contains the groups of similar partial character strings as 1st, 2nd, 3rd candidate, each candidate has a group of characters.

[2] table 7 contain the groups of similar partial character strings as 1st, 2nd, 3rd candidate, each candidate has a group of characters have at least one different character which is similar in shape, example as the lower and the upper of the letter o.

In addition, Itonori/Yamagata discloses: search term expansion device to combine the plurality of similar partial character strings given by the referencing device into expanded words and store them in an expanded word table[3] (col. 18, table 8, Yamagata).

Regarding claim 2 and 17, all the limitations of these claims have been noted in the rejection of claim 1 and 16 above, respectively. In addition, Itonori/Yamagata discloses: wherein the similarity table is arranged in the order of their emergence probability in each group (col. 13, lines 65 to col. 14, lines 17, Itonori) and has only those similar partial character strings whose emergence probabilities are greater than a predetermined value (col. 14, lines 55 to col. 15, line 9, Itonori).

Regarding claim 3 and 18, all the limitations of these claims have been noted in the rejection of claim 1 and 16 above, respectively. In addition, Itonori disclose: wherein, when the similarity table does not include similar different characters[4] (col. 15, table 7, Yamagata), the referencing device gives the partial character strings obtained from the character string diving device to the expansion device, and the search term expansion device uses the partial character strings to produce the expanded words[5] (col. 15, lines 38-52, Yamagata).

Regarding claim 4 and 19, all the limitations of these claims have been noted in the rejection of claim 1 and 16 above, respectively. In addition, Itonori/Yamagata discloses: wherein, when the similarity table does not have entries for the partial character strings obtained from the character string diving device, the referencing device references a second similarity table which stores in advance second groups of similar partial character strings arranged in the order of

[3] table 8 includes all the similar candidates given by referencing table 7.
[4] The similarity table only contains the different character string, which is similar in shape as letter o, O.

magnitude of their emergence probability in each group (col. 14, lines 1-17, Itonori), each of the second groups of similar partial character strings being derived from each of short partial character strings made up of a smaller number of characters than the partial character strings obtained from the character string diving device by changing at least one of the characters of each short partial character string to a different character which is similar in shape (col. 11, lines 51-65, Itonori).

Regarding claim 5 and 20, all the limitations of these claims have been noted in the rejection of claim 1 and 16 above, respectively. In addition, Itonori/Yamagata discloses: wherein, when the entered character string is not divisible into the plurality of partial character strings without a remainder, characters adjoining each character of the remainder character string are added to the each character so that resultant character strings have the same number of characters as the divided character strings (col. 16, lines 43-61, Itonori), and the character strings thus obtained are added to the plurality of partial character strings (col. 16, lines 62 to col. 17, lines 4, Itonori).

Regarding claim 6, Itonori/Yamagata discloses: a system for retrieving a document containing a search character string specified by an operator in a search text documents (col. 11, lines 40-50, Itonori) that are produced by performing character recognition processing on image documents (col. 11 , lines 51 to col. 12, lines 40, Itonori), a search character string expanding method comprising:

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[5] when the conditions for the reference character are determined as satisfying all of the previously describes condition, then product as the recognition results.

a search character string dividing step of dividing the entered search character string into partial character strings each consisting of a predetermined number n of characters (n >= 2) (col. 10, lines 57-col. 11, lines 5, Itonori);

a similarity table referencing step of checking the n-character partial character strings (n >=2) against an n-character-based similarity table, the n-character-based similarity table being generated in advance by storing character strings of similar character shapes that are highly likely to be erroneously recognized (col. 15, table 7, Yamagata); and

a search character string expanding step of extracting groups of similar character strings by checking the partial character strings making up the search character string against the n-character-based similarity table and combining the extracted similar character strings to generate expanded words (col. 18, table 8, Yamagata).

Regarding claim 7, all the limitations of this claim have been noted in the rejection of claim 6 above. In addition, Itonori/Yamagata discloses: wherein entry characters in the n-character-based similarity table include only a part of partial character strings each of which is a combination of n characters (col. 16, lines 10-27, Yamagata).

Regarding claim 8, all the limitations of this claim have been noted in the rejection of claim 7 above. In addition, Itonori/Yamagata discloses: wherein when a partial character string making up the search character string is not found in the n-character-based similarity table, similar character strings to the partial character string are not extracted (col. 16, lines 25-28, Yamagata).

Regarding claim 9, all the limitations of this claim have been noted in the rejection of claim 7 above. In addition, Itonori/Yamagata discloses: wherein when a partial character string

making up the search character string is not found in the n-character-based similarity table (col. 16, lines 25-28, Yamagata), an m character-based similarity table, which is prepared in advance by storing similar m-character strings (m < n) of similar character shapes highly likely to be erroneously recognized, is referenced to generate expanded words (col. 7, table 3, Yamagata).

Regarding claim 10, all the limitations of this claim have been noted in the rejection of claim 6 above. In addition, Itonori/Yamagata discloses: further including a expansion method switching step of calculating a length of the search character string and selecting between expanded word generation methods according to the search character string length (col. 7, table 2, Yamagata).

Regarding claim 13, all the limitations of this claim have been noted in the rejection of claim 11 above. In addition, Itonori/Yamagata discloses: wherein whether the expanded words are generated or not is determined according to the search character string length (col. 22, lines 52-61, Itonori).

Regarding claim 14, all the limitations of this claim have been noted in the rejection of claim 13 above. In addition, Itonori disclose: wherein setting information is provided for selecting between the expanded word generation methods (col. 32, lines 21-43, Itonori).

Regarding claim 15, all the limitations of this claim have been noted in the rejection of claim 14 above. In addition, Itonori/Yamagata discloses: a text search step of executing a search by using as a search condition a logical sum of expanded search character strings obtained by the search character string expansion (col. 14, lines 27-43, Yamagata).

3. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itonori et al. (U.S 5943443) (Itonori) in view of Yamagata et al. (US 5048113) (Yamagata) and further in view of Kubota (U.S 6041323).

Regarding claim 11, Itonori/Yamagata discloses: In a system for retrieving a document containing a search character string specified by an operator in a search through text documents that are produced by performing character recognition processing on image documents (col. 2, lines 51 to col. 3, lines 19, Itonori), a search character string expanding method comprising:

search term expansion method switching step of calculating a length of the search character string and selecting between expanded word generation methods according to the search character string length (col. 32, lines 21-43, Itonori). However, Itonori/Yamagata didn't disclose: wherein said expended word generation methods include a method of adjusting the number of expanded search character strings. On the other hand, Kubota discloses: wherein said expended word generation methods include a method of adjusting the number of expanded search character strings (col. 15, lines 13-50, Kubota). Thus, at the time invention was made, it would have been obvious to a person of ordinary skill in the art to include the step for expanding character strings generated is adjusted according to the search character string length in the system of Itonori as taught by Kubota. The motivation being to enable to fit the length value during searching character string for the expansion decision according to the kind of characters in languages.

Regarding claim 12, all the limitations of this claim have been noted in the rejection of claim 10 above. In addition, Itonori/Kubota discloses: wherein the number of expanded character

strings generated is adjusted according to the search character string length (col. 15, lines 13-50, Kubota).

4. Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S-5581752, Electronic document retrieval and display system and method of retrieving electronically stored documents.

U.S-5987460, Document retrieval assisting method and system for the same and document retrieval service using the same with document frequency and term frequency.

US-6173253, Sentence processing apparatus and method thereof utilizing dictionaries to interpolate elliptic characters or symbols.

US-5991755, Documents retrieval system for retrieving a necessary document.

US-5680612 , Document retrieval apparatus retrieving document data using calculated record identifier.

U.S-6473754, Method and system for extracting characteristic, method and system for searching for relevant document using the same, storage medium for storing characteristic string extraction program, and storage medium for storing relevant document searching program.

U.S-5469354, Document data processing method and apparatus for document retrieval.

5. Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy Nguyen whose telephone number is 703-305-4698. The examiner can normally be reached on M-F: 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cindy Nguyen
October 17, 2004

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